### MAIN RESULTS

9 RCTs (n = 5168) met the selection criteria (mean age 51 y, 50% men). Dietary interventions included restrictions on calories (7 RCTs) or fat intake (2 RCTs) and often included weight loss goals (2 RCTs). Physical activity interventions included counselling to increase activity (2 RCTs), supervised sessions several times a week (4 RCTs), or daily aerobic sessions in a residence programme (1 RCT). Behavioural interventions included intensive behavioural techniques (1 RCT), goal setting (2 RCTs), self feedback with food or exercise diaries (3 RCTs), and stress management or improved coping skills (1 RCT). Meta-analyses were done using a random effects model. Reductions in weight and BMI and percentage weight loss from baseline were greater in the intervention group than in the control group at various points of follow up (table).

### CONCLUSION

Dietary, physical activity, and behavioural interventions are effective for inducing or maintaining weight loss in adults with prediabetes.

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**Commentary**

The review by Norris et al provides evidence that non-pharmacological interventions for adults with impaired glucose tolerance are effective in producing long term weight loss and modest, but clinically meaningful, improvement in metabolic outcomes. A strength of the review is that the original RCTs included participants from the US (including ethnic minorities), UK, Europe, and Asia, and so the findings may be generalisable to diverse populations. The results support the clinical guidelines for the treatment of overweight and obesity published by the National Heart, Lung, and Blood Institute and World Health Organization. These 2 organisations recommend combined interventions of caloric restriction, increased physical activity, and behaviour therapy.

Weight loss interventions were most often implemented by dietitians or exercise physiologists, a feature that must be addressed in the context of dissemination and translation to clinical practice. Implications of this review go beyond clinical translation to that of policy and suggest that resources (dietitians and exercise physiologists) and reimbursement issues should be addressed in an effort to make effective weight loss interventions available to all people needing such intervention.

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### Dietary, physical activity, or behavioural strategies versus a control condition (no intervention, usual care, or the same intervention at a different intensity) in adults with prediabetes*

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Follow up (years)</th>
<th>Number of trials (n)</th>
<th>Weighted mean difference (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss (kg)</td>
<td>1</td>
<td>4 (1016)</td>
<td>−2.8 (−4.7 to −1.0)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (700)</td>
<td>−2.6 (−3.3 to −1.9)</td>
</tr>
<tr>
<td></td>
<td>&gt;2 years</td>
<td>2 (2229)</td>
<td>−4.9 (−6.7 to −3.1)</td>
</tr>
<tr>
<td></td>
<td>Most distal follow up</td>
<td>6 (2799)</td>
<td>−3.2 (−4.8 to −1.7)</td>
</tr>
<tr>
<td>Body mass index (kg/m²)</td>
<td>1</td>
<td>3 (802)</td>
<td>−1.3 (−1.9 to −0.8)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (203)</td>
<td>−0.8 (−1.2 to −0.5)</td>
</tr>
<tr>
<td>Weight loss (%)</td>
<td>1</td>
<td>4 (1016)</td>
<td>−3.3 (−5.3 to −1.3)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3 (700)</td>
<td>−3.1 (−3.9 to −2.3)</td>
</tr>
</tbody>
</table>

*Meta-analyses were done using a random effects model; all significant differences favour intervention groups. CI defined in glossary.
Review: non-pharmacological interventions induce or maintain weight loss in adults with prediabetes

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